

# Ozark Plateau Ecosystem

## *Fiscal Year 1999 Annual Report Region 3*

*Located in Shannon County, Mo.,  
the Big Spring is the largest spring  
in the world to flow from a  
limestone aquifer.*

-USFWS Photo by Kelly Srigley-Werner



### Ecosystem Description

Spanning parts of four states and encompassing 50,000 square miles, the Ozark Ecosystem is perhaps the most biologically diverse region in the United States. Probably known best for its mountainous topography, the Ozarks are also plateaus, hills, rocky outcrops, and gently rolling terrain sprinkled with clear streams and waterfalls. The rough landscape is covered by large tracts of oak and -hickory forests, with bottomland hardwoods dominating the flood plains of several large rivers: the Osage, Arkansas, White, Neosho, St. Francis, and Black. A few remnants of the tall grass prairie remain on the plateaus as well as oak and pine savannah. Caves, springs, sinkholes, and underground river systems abound beneath the scenic surface.

Human activities have not affected the Ozark ecosystem as widely as in other parts of the country, probably because of the hilly, rocky terrain. But even though change hasn't come quickly to the Ozarks, the impacts can be seen. Agriculture (both live-stock and row crop) is dominant on upland areas of the southwest region, while forests in the central and southern region are logged for furniture, pallets, charcoal, and paper. Mining – lead, coal, zinc, iron, and barite – are also very important industries in the east and south. Tourism plays the most significant part in the Ozark economy. Although impacts are notable, the region is also

considered by ecosystem team members to be one of the country's most recoverable.

Because water systems play such an important role in the Ozark ecosystem, water quality is probably the greatest area of concern to resource managers. Many of the endangered and threatened species within the ecosystem are associated with aquatic habitats ,including caves and streams. Contamination of ground-water, and subsequently underground waters systems, is a primary threat. Sources of pollution include mining activities, residential and industrial waste, sedimentation, and runoff from animal feeding facilities. Residential development continues to fragment forest habitat. Sand and gravel dredging in rivers and streams causes habitat loss and degraded water quality. Exotic species such as the zebra mussel and grass carp threaten to edge out native plants and animals, and construction of reservoirs and impoundments alters riverflow and habitat. Says Team Leader Kelly Wrigley-Werner, "Many would say the Ozarks are fairly intact, but we are noticing more and more pressure to develop areas in the Ozarks, and the human population in the area has dramatically increased in recent years. Our ecosystem team makes it a priority to assist other federal and state agencies, as well as the public, to preserve the aquatic and terrestrial biodiversity in the Ozarks. One thing I have noticed is that as the people in some parts of the Ozarks begin to see changes in their water quality, they are getting involved with agencies to find ways to fix it – this is a key to the success of our efforts in the area – it's a locally led commitment by the people living in the Ozarks which will help us achieve our goals."

### **Ozark Plateau Ecosystem Team**

The Ozark Plateau Ecosystem Team is relatively small, represented by four National Fish Hatcheries, two Ecological Services offices, one Law Enforcement office and one National Wildlife Refuge. The team boundary covers two states, Missouri and Arkansas, and crosses two Service Regions. The team, at this point, is not organized by subgroup due to its small size. Members discuss issues and establish priorities based on the activities occurring in the region and by program and office. From there the team involves other agencies, universities, and partners.

Other state and federal agencies are involved in individual projects; the team is just beginning to incorporate other partners in team meetings. There are efforts, though, to take advantage of expertise of other agencies to accomplish team goals: The Natural Resources Conservation Service provided information on methods used to gather existing water quality data in a watershed. A representative of the Missouri Resources Assessment Partnership presented ways to incorporate geographic information systems (GIS) into the team's way of doing business.

The team is making progress in identifying and addressing its resource management challenges. The team has identified issues



*The federally-threatened Missouri bladderpod grows on this 240-acre site created through the Partners for Fish and Wildlife Program, The Nature Conservancy and the Missouri Department of Conservation.*

-USFWS Photo by Kelly Srigley-Werner

of concern to help focus its energy and resources. They include loss and degradation of habitat and habitat fragmentation for streams and uplands; disruption of natural processes such as fire in prairie and savanna landscapes; increasing impacts of pollution and exotic species on streams and rivers; lack of data on natural communities; lack of public awareness of the region's natural value; increasing human populations; decreasing biodiversity of aquatic species and neotropical migrants; and lack of funds to conserve and restore habitat.

Fish hatcheries have and will continue to play a lead role in meeting the challenges of resource management in the Ozarks. Neosho and Mammoth Springs National Fish Hatcheries are working with local universities in perfecting ways to propagate freshwater mussels in captivity. Working with common freshwater mussels to refine their techniques, the hatcheries hope their facilities will someday provide the same function for endangered mussel species for reintroduction into restored native habitats. Hatcheries will also play a role in developing and implementing recovery strategies for endangered species; and continue their work in providing fish for mitigation purposes.

Improving the quality of ground water and underground water systems in caves is the focus of a landowner contact and habitat restoration program aimed at protecting the endangered Ozark cave fish. Other work for neotropical migrants and native fish and wildlife includes reforestation of bottomland hardwoods on Mingo National Wildlife Refuge, inventorying reptiles and amphibians on the refuge, and partnerships with the Missouri Department of Conservation for monitoring Indiana bats and censusing Ozark cavefish.

Efforts of the Ozark Ecosystem Team are guided by the team's goals, which include forging of partnerships; restoration and enhancement of habitat for endangered and threatened species; protection and restoration of aquatic communities; management of special communities such as prairies, savannas, and special geologic features including limestone and dolomite glades, caves and sinkhole ponds; protection and enhancement of forest communities in cooperation with other state and federal agencies and private landowners; reduction of contaminants; and facilitating environmentally sustainable use of natural resources. Two meetings were held this fiscal year for team members and invited guests of the Ozark Plateau Ecosystem. The first meeting, held in January 1999, at Springfield, Mo., focused on priority setting for the Ozark ecosystem and a discussion on results from the 1998 Environmental Roundtable meeting in Geneva, Wisconsin. In July 1999, a second meeting was held in Springfield, Missouri, to identify accomplishments by various team members, prioritize Ozark watersheds, discuss water quality data format and James River water quality data, participate in a MoRAP

demonstration of Ozarks GIS data, and review team budgets. In addition, a joint meeting with the Lower Missouri Ecosystem included such topics of discussion as Federal wildlife laws, snow goose management, and status of the Ozark ecosystem.

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## Summary of Fiscal Year 1999 Accomplishments

A variety of goals were identified in the Fiscal Year 1999 annual work plan for the Ozark Plateau Ecosystem. This team developed goals directly relate to objectives that can be found in the action plan for the Ozark Plateau Ecosystem. A total of 30 acres of bottomland hardwood trees were planted on Mingo NWR through a partnership between the National Tree Trust, Mingo NWR and Mingo Job Corp Center. An inventory of herptiles in disturbed and undisturbed habitats was begun at Mingo NWR through cooperation with various colleges and Universities in Missouri and Arkansas. A census of Ozark cavefish in Turnback Cave was completed with the assistance of the Missouri Department of Conservation. At Pilot Knob NWR, a monitoring system was established with the Missouri Department of Conservation and other partners for Indiana Bat use. Mitigation hatcheries continued efforts to serve the public through the production and stocking of rainbow trout, paddlefish, lake sturgeon and other species. Efforts also continue for the rearing of mussel species, with the intent to have hatcheries serve as refugia for endangered mussels until a time for release into the wild is established. This year, efforts were begun to successfully rear and maintain fat pocketbook in a controlled environment. Finally, Law Enforcement began a comprehensive investigation into oil pits in southwest Missouri and eastern Kansas to determine effects on migratory birds and other trust resources.

Through opportunities such as the Clean Water Action Plan, Non-game Bird Program, Fish Habitat Restoration Program, and Challenge Cost Share Program a variety of on and off Service land projects were funded in Fiscal Year 1999. These funds are typically directed to projects that address resource needs within the ecosystem. Examples include stream and streamside improvements in the James and Brush Creek watersheds.

In April, 1999, Ms. Kelly Srigley Werner, a Fish and Wildlife Biologist in the Columbia Ecological Services Office, became the new Team Leader. Her familiarity with Ozark resources, knowledge of Service activities and ability to form partnerships and build consensus will maintain a strong presence for the Ozark Plateau Ecosystem.

## **Goals for Fiscal Year 2000**

The following activities have been established for team members of the Ozark Plateau Ecosystem in fiscal year 2000.

### **Lift the Conservation of Migratory Birds to a Higher Level**

Species listed in the Region 3 Resource Conservation Priorities Plan will receive special attention in planning for the restoration of 15 miles of riparian and associated habitat in the Niangua River, James River and Brush Creek watersheds and 450 acres of savannah/grasslands and 100 acres of wetland throughout the ecosystem.

### **Strengthen the Ecosystem Approach to Fish and Wildlife Conservation**

Participate with other state, federal and Tribal partners in organization of the White River Comprehensive Plan and investigate the effects of water resource development activities on fish and wildlife resources in the basin.

The Ozark Plateau will continue to receive special attention as one of the thirteen focus areas identified by the Midwest Natural Resources Group. Special emphasis will be placed on the development of effective partnerships among the many Federal and State entities within at least one watershed of the Ozark Plateau to improve water quality and stream habitat.

Initiate discussion with state and federal partners for the improvement of the Meramec Basin with emphasis on its declining community of native mussel species.

Continue investigating and perfecting mussel propagation techniques in National Fish Hatcheries and in association with State partners and universities in Arkansas and Missouri.

Continue Developing an education strategy and produce brochures and informational videos for visitors at National Fish hatcheries to help promote the ecosystem approach and inform the public about activities conducted by all divisions of the Service.

Form cooperative partnerships and advance efforts to control red cedar and *Sericea lespedeza* on 150 acres of prairie and glade habitats.

### **Lead Efforts to Prevent the Introduction and Spread of Invasive Species**

Work with state, federal and local partners to identify methods and strategies for zebra mussel and Asiatic clam control in the Meramec Basin.

### **Set the Course for the Future of the Refuge System**

Assist with implementation of recommendation WH17 identified in Fulfilling the Promises document, particularly as it relates to expansion of the Marais des Cygnes NWR in Missouri.

## Fiscal Year 1999

### Accomplishments

#### **Mingo NWR Participates in Missouri Game-check**

##### *Mingo National Wildlife Refuge*

Rod Hansen assisted the Missouri Department of Conservation (MDC) and the Missouri Highway Patrol with a road block south of St. Louis on U.S. Hwy. 67. The MDC sponsored road block stopped all traffic northbound on Hwy. 67 to check for game violations. The event took place the night of November 15, the Sunday opener for the Missouri Deer season. Numerous citations were issued by MDC including 11 illegally killed deer and numerous other tagging violations. The highway patrol also made some arrests for other traffic related violations. A grand total of approximately 70 uniformed officers from MDC, Missouri Highway Patrol, Madison County Sheriff Dept, and the Service participated in the check. Partners include: Missouri Dept. of Conservation-Madison County, Missouri Sheriff Dept., Missouri Highway Patrol 11/15/98

#### **Missouri Girl Scouts Assist Mingo NWR**

##### *Mingo National Wildlife Refuge*

A Jackson, Mo., Girl Scout troop has become very active in assisting Mingo National Wildlife Refuge with labor to accomplish resource objectives. The troop has dedicated to visit the refuge one day each weekend for a three month period to work on acorn planting, trash removal, seed harvesting, and other various

other labor intensive details. Martha Koeller, the troop leader stated "The wildlife doesn't quit in the winter, so neither will we." 12/6/98

#### **Disabled Hunter Finds Success During Mingo Refuge Hunt**

##### *Mingo National Wildlife Refuge*

Randy Wallace, permanently disabled and restricted to a wheelchair, found hunting success at a managed deer hunt on Mingo National Wildlife Refuge. Wallace successfully took two does with a muzzleloader during the early January hunt. Refuge staff built a mobile wheelchair accessible blind that can be easily moved from one location to another. Doug Siler, Heavy Equipment Operator came up with the design for the blind which can be hooked up to a three point hitch for transport. 1/10/99

#### **Mingo NWR Staff Survive Managed Deer Hunt**

##### *Mingo National Wildlife Refuge*

The staff of Mingo NWR are happy to have completed another Managed Deer hunt on the refuge. Administration of the hunt is accomplished by the Missouri Department of Conservation. The hunt is open to muzzleloaders only by special permit. An ice storm the day before the first hunt (Jan. 9-10) left most of the refuge roads closed to vehicle travel and most of the hunters were restricted to a small portion of the open hunting area. Then, the day before the second hunt (Jan. 23-24) the Mingo area received 8.1 inches of rainfall,

again closing many of the roads to flooding. The refuge road system received considerable damage from the flooding. All total, 56 deer were taken by approximately 250 hunters during the two hunts. 1/24/99

#### **Mingo NWR Holds Eagle Days Events**

##### *Mingo National Wildlife Refuge*

Approximately 1,300 attended an "Eagle Days" Program and events held at Mingo NWR. The Mingo visitor center contained multiple special exhibits on eagle biology, history, and conservation, as well as several different eagle videos. A special program was conducted by the Dickerson Park Zoo (Springfield, Mo.) that featured Phoenix, a 10 year old bald eagle who has become the Ambassador to the species in Missouri. Scopes were attended at Duck Creek Conservation Area and visitors were able to watch a pair of live eagles in the wild. The eagles put on a great show as they were building onto the existing nest the entire weekend. Also set up were puzzles and a coloring table for the kids. Partners include: Missouri Department of Conservation, Scenic Rivers Audubon Society 2/7/98

#### **Region's Biologists Focus on Ecosystem Approach at St. Louis Training Forum**

##### *Region 3*

Approximately 220 biologists attended "Biology and the Ecosystem Approach: Putting the Pieces Together," a training forum for all biologists in Region 3. The four-day forum was held in February in St.

Louis, Mo. Forum topics included trust resource overviews, Program overviews, habitat conservation, research, monitoring and data management, population management, adaptive resource management, and challenges facing biologists. Many biologists gave presentations, all focused on the Ecosystem Approach. Partners include: Missouri Department of Conservation, Colorado State University, Iowa State University. 2/12/99

### **Mingo NWR Hosts Hunter Education Class**

#### *Mingo National Wildlife Refuge*

Mingo NWR hosted another hunter education certification course recently. Missouri requires that each hunter must have complete a 10 hour course prior to hunting. Mingo generally hosts two such classes annually with one in early spring and the other held in the fall prior to the firearms deer season. Refuge supervisor Rod Hansen, Mic Plunkett, Missouri Department of Conservation and other Mingo volunteers taught the certification course this session. 3/20/99

### **Service Assists Missouri at Turkey Season Checkpoint**

#### *St. Peters Law Enforcement*

On the first weekend of the Missouri turkey season, Special Agent Leapley assisted Missouri Conservation Agents at a checkpoint on U.S. Highway 63 at the Missouri/Arkansas state line to detect any illegal game being taken across state lines in violation of the Lacey Act. A total of 28 wildlife violations were detected within about

four hours and these consisted mainly of untagged turkeys, unchecked turkeys, and attempting to take overlimits of turkeys. The Missouri Highway Patrol made eight arrests on various charges including a felony warrant. Violators were residents of Arkansas, Mississippi and Louisiana. 4/30/99

### **Illinois Fugitive Sentenced in Missouri Court**

#### *Mingo National Wildlife Refuge*

Kenneth Warren was sentenced to seven years for vehicular manslaughter and seven years for theft from an incident that occurred in March 1998 on Mingo National Wildlife Refuge. Warren had escaped from a juvenile detention facility in Illinois, stole a truck, and caused a traffic accident adjacent on the refuge, claiming the life of a Puxico, Missouri woman. Warren fled the scene on foot and was apprehended by Refuge Officer Rod Hansen just minutes after the accident. Warren was initially charged with second degree murder, but the charge was dropped to manslaughter in exchange for a guilty plea. 5/30/99

### **New Fishery Biologists Increase Reach of Carterville Fishery Resources Office**

#### *Carterville Fishery Resources Office*

The Carterville Fishery Resources Office (FRO) added two new fishery biologists in Fiscal year 1999, strengthening its biological staff. Chad Stinson joined the staff in March for a one-year term. Greg Conover joined June 6,

1999, as a permanent employee. The addition of two fishery biologists to the staff improves its capability to be actively involved in the management of the regions aquatic resources. Chad Stinson is working on a biological assessment of the Kankakee River drainage, a pallid sturgeon survey on the lower Ohio River, and SIKES Act fishery management activities. Greg Conover manages the MICRA National Paddlefish Database and Coded-Wire Tag Processing Center, conducts inspections for the Service's Triploid Grasscarp Inspection/Certification Program, and conducts fishery management activities on waters owned by the Department of Defense. 6/6/99

### **900 Summer School Students Attend Environmental Classes at Mingo NWR**

#### *Mingo National Wildlife Refuge*

Twenty school groups of approximately 900 students descended upon Mingo NWR in June to participate in environmental education classes sponsored by the refuge. Rod Hansen completed the majority of the instruction and activities for the students with assistance from weekend receptionist Monica Siler and Job Corps Environmental Education instructor Bridget Jackson. Students received education on the hardwood bottomland swamp, wetlands, agriculture, migratory birds, endangered species, the National Wildlife Refuge System, and various other topics as desired by individual school educators.

Missouri has implemented a strong summer school Program to advance talented students while providing opportunities for other students to make up for deficiencies. Mingo NWR provides an excellent outdoor classroom for area schools.  
6/30/99

### **Mingo NWR Hosts Youth Fishing Clinic**

*Mingo National Wildlife Refuge*

Approximately 100 youth (ages 13 and under) attended a "Pathways To Fishing" clinic put on at Gritman Lake on Mingo National Wildlife Refuge. Many refuge staff, numerous volunteers, and representatives from several surrounding agencies assisted Mingo to attend eight different stations involved with the clinic. Youth learned about knot tying, use of baits, aquatic conservation, ethics, fish ID, how to weigh and measure fish, and properly handling fish to name a few. Each youth was given a "scorecard" that was initialed each time he/she visited a station. When the card was completed it was turned in at the registration desk for a t-shirt and other promotional items. Gritman Lake was also stocked with channel catfish three weeks prior to the clinic. The fish catch was down slightly this year from previous years, but many kids still caught a healthy supply. Partners include: Missouri Department of Conservation and U.S. Army Corps of Engineers.  
6/30/99.

### **U.S. Naval Reserve Unit Volunteers Weekend at Mingo NWR**

*Mingo National Wildlife Refuge*

A Naval Mobile Construction Battalion (NMCB 28) from Cape Girardeau, Missouri spent its weekend drill at Mingo NWR, July 9-11, 1999. The battalion, consisting of 42 Navy Sea -Bees donated 1,176 volunteer hours to the refuge performing construction and maintenance projects. Projects completed included the construction of a large concrete box culvert, many of the refuge roads were graded, safety guard rails were constructed on a bridge, several fields were disked or mowed, gravel was hauled and spread around many of the public use areas, and dozer work on levee repair. The Sea-Bees brought their own heavy equipment to supplement existing refuge equipment. The project was organized by Doug Siler, heavy equipment operator and Rod Hansen, assistant refuge manager. 7/11/99

### **Refuge-Sponsored Camp Introduces Minorities to Natural Resource Careers**

*Mingo National Wildlife Refuge*

Staff at Mingo National Wildlife Refuge joined with other natural resources agencies to coordinate the Natural Resources Career Camp (NRCC), a two week camp for minority students that exposes them to outdoor activities and career opportunities in Natural Resources. Rod Hansen, assistant Refuge manager, worked with representatives of the U.S. Forest Service, Natural

Resources Conservation Service (NRCS) and the Missouri Department of Conservation (MDC) to organize the camp and provide instruction. The NRCC is a three-year program held at the University of Missouri Forestry Camp, located just minutes from the Refuge. New high school sophomores spend their first two summers at the camp receiving instruction from resource managers. Their final year is spent on the campus of Lincoln University. African and Asian American students, joined Native American students from throughout Missouri at the camp. Approximately 40 students participated. Rod Hansen facilitated CPR and first aid certification for new students and gave a four- hour joint presentation on natural resources law enforcement. Hansen also coordinated two day-long programs on identification of trees and wetlands assisted by Charlie Shaiffer, Refuge biologist. Hansen also coordinated a wildlife biology and management seminar at the Refuge which involved taking the students along on an actual deer survey. Students also spent one weekend on a camping and canoe trip down the Caster river. While the first-year class learned canoeing basics in a shallow pond, the second-year class was led on a four-mile ride down the river to only a few miles north of the Refuge. During the trip, students learned how to pitch tents, to fish, and how to properly prepare and preserve food for camping outings. Students also got a day- long

class on the National Wildlife Refuge System, which included an extensive tour of Mingo NWR, and classroom activities. Hansen also led the students on trips to Missouri state parks, introducing them to park managers.

The final day of camp was a career day. Mingo NWR invited representatives from various natural resource agencies to deliver presentations on potential careers for students.

Other classes taught by other Resource professionals, included surveying, compass and map reading, fisheries management, a five-mile hike, geology and irrigation management. Mingo NWR contributed \$5,000 to support the camp in addition to hundreds of hours of staff time to organize and plan the camp. The camp is an on-going initiative to be continued again next year.

Partners include: U.S. Forest Service U.S. Army Corps of Engineers, Natural Resources Conservation Service Missouri Department of Conservation, Missouri Department of Natural Resources, Lincoln University and University of Missouri. 7/16/99

### **Mingo NWR Participates in State's Summer Youth Training Program**

*Mingo National Wildlife Refuge*

Mingo NWR is using a Missouri program to provide work experience to youth while providing a valuable service at essentially no cost to the Refuge. The Southeast Missouri Private Industry Council sponsors the "Job Training Partnership Act" (JTPA)

which provides funding to employ students enrolled in upper high school levels to perform community service at some local governmental entity. Mingo NWR was chosen as a work site for two students. The students perform basic maintenance including painting, trash pickup, weed control, etc. on the Refuge for a 40 hour-per-week tour during summer months. The cost to Mingo NWR is \$100 monthly for administrative costs. 7/21/99

### **Mingo Refuge Biologist Develops New Duck Trap**

*Mingo National Wildlife Refuge*

Charlie Shaiffer, a biologist at Mingo NWR, has developed a new, innovative process to catch and band adult wood ducks. Shaiffer constructed a traditional wood duck box with an additional bottom compartment. The bottom of the box contains a balanced trap door. When a wood duck lands in the box, it hits the trap door which sends it to the hidden compartment below. As the duck falls, another door temporarily swings into place to prevent other ducks from escaping. The ducks are not harmed and can easily be caught, banded, and released. The traps require daily observation, however, during the early breeding season. Two traps were constructed on Mingo in the spring of 1999, and were responsible for capturing 170 adult birds, which were all banded and released. The Refuge plans to adopt the new technology for long-term use in its banding efforts. 7/26/9

### **Refuge Staffers Assist State With Hunter Education Class**

*Mingo National Wildlife Refuge*

Refuge staff assisted the Missouri Department of Conservation (MDC) to conduct a Missouri Hunter Education Certification Course for 42 young hunters at the Mingo NWR visitor center August 7, 1999. Refuge staff assisted MDC agent Mic Plunkett with the course, which was taught over two evenings and a Saturday morning. 8/7/99

### **Refuge Opens Auto Tour For Puxico Homecoming**

*Mingo National Wildlife Refuge*

Mingo NWR helped its local community of Puxico, Mo., celebrate its annual Homecoming celebration August 10-15, 1999, by opening up the special Refuge Auto Tour. Approximately 200 vehicles drove the 25-mile tour, which is normally only open on Sundays in April, October and November.

"Homecoming" is a local event designed for past and present residents of Puxico. Past residents are invited to return and join current residents for a week of festivities. 8/14/99

### **Mingo NWR Participates in Southeast Missouri Fair**

*Mingo National Wildlife Refuge*

Mingo NWR personnel staffed a Refuge exhibit at the regional Southeast Missouri (SEMO) fair Sept. 13 - 18, 1999. The exhibit included several preserved animal specimens, bird bands, volunteer items, a large deer rack,

and various other natural resource items. The fair building that was utilized is owned by the Missouri Department of Conservation and is used to showcase its activities and accomplishments. An estimated 25,000 people visited the display area in 1999. Mingo NWR staff estimated about 1,300 of these visits were meaningful contacts. Partners include: Missouri Dept of Conservation. 9/18/99

**Mingo NWR Hosts Girl Scouts' Water Festival**  
*Mingo National Wildlife Refuge*

Mingo NWR recently hosted a regional Girl Scouts water festival at the Refuge visitor center. Bridget Jackson, environmental education specialist at Mingo NWR, orchestrated the event which included approximately 125 Brownies (first to third graders) and Girl Scout leaders. Jackson trained and led several Mingo Job Corps students to conduct water experiments with the girls that included density differences between swamp, tap and salt water differences between tap, distilled and spring water, and several other experiments. Jackson also led the students through a "Project Wet" exercise. 9/25/99

**Carterville FRO Manages National Paddlefish Database and Coded-Wire Tag Processing Center**

*Carterville Fishery Resources Office*

The Mississippi Interstate Cooperative Research Association (MICRA) national paddlefish database and an associated coded-wire tag processing center are managed by the Carterville Fishery Resources Office (FRO). During Fiscal Year 1999, the Center processed 5,370 coded-wire reference tags from wild captured fish and 104 reference tags for 52 stockings of 85,492 hatchery reared fish. Coded-wire tags recovered from 281 recaptured paddlefish were processed and linked to release data in the database. At the end of the fiscal year, the database contains individual records for 1.1 million stocked paddlefish, more than 9,000 wild tagged paddlefish and nearly 1,000 tag recoveries.

Long and short distance migrations between state management jurisdictions and between important paddlefish habitats have been documented. Individual data summaries were constructed and distributed to participating states. MICRA is comprised of 28 member state natural resource agencies.

Twenty-three states contributed to the MICRA paddlefish database.

The national study is designed to assess the population status of paddlefish, formulate estimates of harvest and exploitation, and to describe their movement and migration patterns throughout the Mis-

issippi Basin. The project will continue during Fiscal Year 2000.

Partners include: Blind Pony NFH; Carbon Hill NFH; Centerton NFH; Garrison Dam NFH; Gavins Point NFH; Mammoth Spring NFH; Natchitoches NFH; Neosho NFH; Private John Allen NFH; Tishmingo NFH; Uvalde NFH; Alabama, Arkansas and North Dakota Divisions of Game & Fish; Minnesota, Iowa, Illinois, Indiana, Ohio, Wisconsin and West Virginia Departments of Natural Resources; Kansas Department of Wildlife & Parks; Kentucky Department of Fish & Wildlife, Louisiana Department of Wildlife & Fisheries; Mississippi and Montana Departments of Wildlife, Fish, & Parks; Missouri Department of Conservation; Nebraska Game & Parks Commission; New York Department of Environmental Conservation; Oklahoma Department of Wildlife Conservation; Pennsylvania Fish & Boat Commission; South Dakota Department of Game, Fish, & Parks; Tennessee Wildlife Resources Agency and Texas Parks & Wildlife Department. 9/30/99